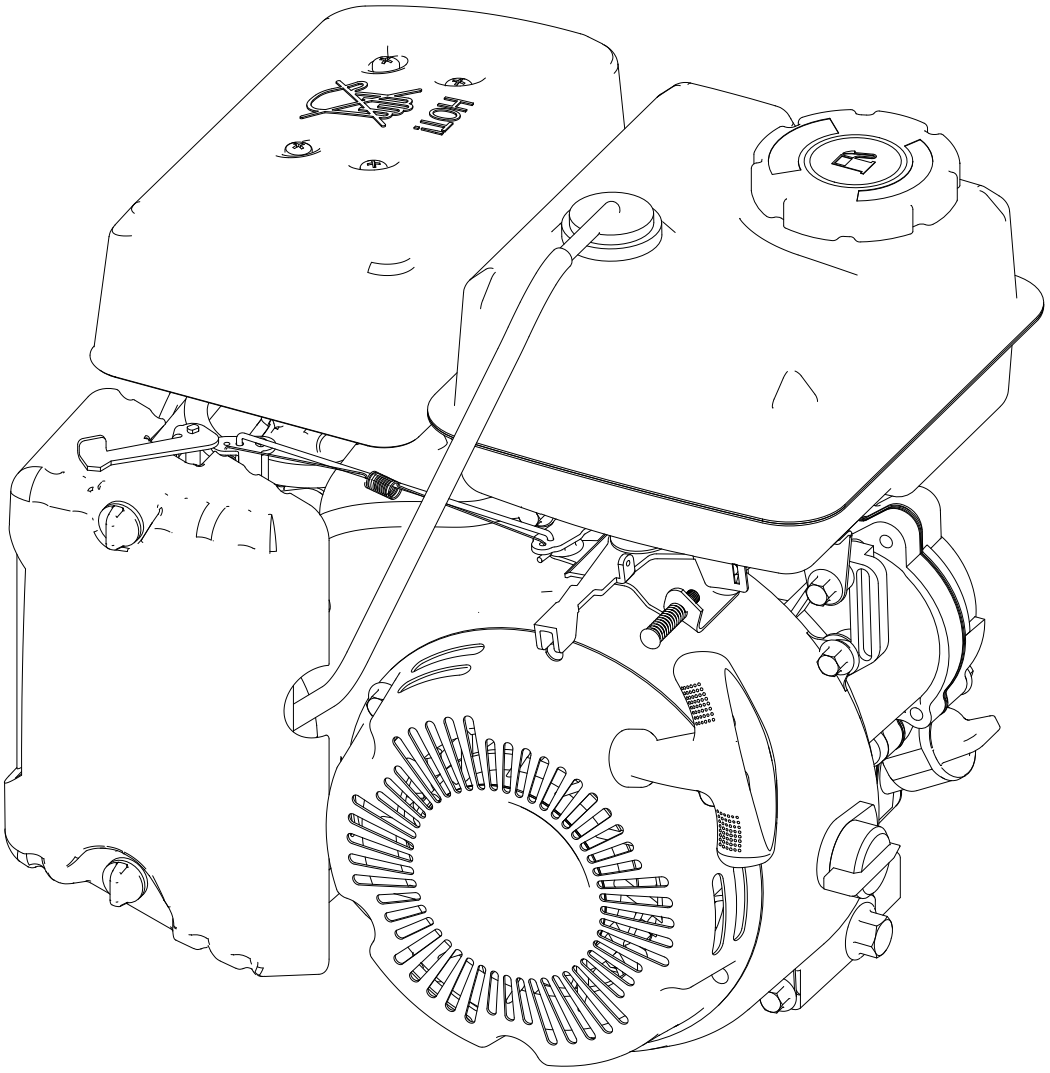
Operator's Manual
Original Operating Instructions

Viper® 99cc 4-Cycle Engine



Includes Model: 13276

Email for more information
info@ardisam.com

P/N: 13279
ECN: 9540
Rev. 10/11/12
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INTRODUCTION

Congratulations on your investment in quality. Thank you for purchasing a Viper® Engine. We have worked to ensure that your engine meets the highest standards for usability and durability. With proper care, your engine will provide many years of service.

Please read this entire manual before installation and use. Viper® reserves the right to change, alter or improve the product and this document at any time without prior notice.

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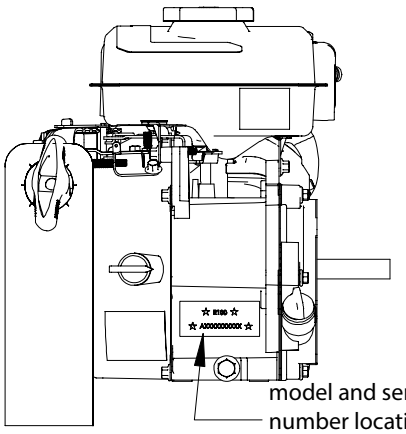
FEDERAL EMISSION INFORMATION

Viper® warrants to the retail purchaser, that this small, off-road engine was designed, built and equipped to conform at the time of initial sale to all applicable regulations of the U.S. Environmental Protection Agency (EPA).

REGISTRATION AND SERVICE

Record the engine model number and serial number in the space provided for easy reference when ordering parts or requesting technical support. Excluding emissions-related warranty items, the warranty is valid only if the completed registration is received by Ardisam within 30 days of purchase. **(SEE WARRANTY SECTION FOR MORE INFORMATION.)** Warranty for your Viper® Engine is carried out by registering the product which your Viper® Engine powers. You can register your warranty online by visiting www.ardisam.com, or by mailing it to: Ardisam, 1160 Eighth Avenue, Cumberland, WI 54829. You may also call our customer service department at (800) 345-6007 Mondays through Fridays from 8 a.m. to 5 p.m. CST.


model and serial number location

OWNERSHIP RECORDS		
Owner's Name:		
Owner's Address:		
City:	State/Province:	Zip Code/Postal Code:
Model Number:	Serial Number:	
Date of Purchase:		
Notes:		

This manual may contain information for several models. Read and keep this manual for future reference. This manual contains important information on SAFETY, ASSEMBLY, OPERATION, AND MAINTENANCE. The owner must be certain that all the product information is included with the unit. This information includes the MANUAL, the REPLACEMENT PARTS and the WARRANTIES. This information must be included to make sure state laws and other laws are followed. This manual should remain with the engine even if it is resold.

WARNINGS AND SAFETY PRECAUTIONS

OPERATOR'S RESPONSIBILITY

Accurate, safe and effective use of this engine is the operator's responsibility.

- Read and follow all safety instructions.
- Maintain the engine according to directions and schedule included in this Viper® operator's manual.
- Ensure that anyone who uses the engine is familiar with and understands all controls and safety precautions.

SAFETY MESSAGES

Your manual contains special messages to bring attention to potential safety concerns, engine damage as well as helpful operating and servicing information. Please read all the information carefully to avoid injury and engine damage.

NOTE: General information is given throughout the manual that may help the operator in the operation or service of the engine.

This symbol points out important safety instructions which if not followed could endanger your personal safety.

BEFORE OPERATING ENGINE:

⚠ WARNING

READ ENTIRE OPERATING AND MAINTENANCE INSTRUCTIONS FOR THIS PRODUCT AND THE INSTRUCTIONS FOR THE EQUIPMENT THIS ENGINE POWERS. FAILURE TO FOLLOW INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH. OPERATE THE ENGINE ACCORDING TO THE SAFETY INSTRUCTIONS OUTLINED HERE AND INSERTED THROUGHOUT THE TEXT. ANYONE WHO USES THIS ENGINE MUST READ THE INSTRUCTIONS AND BE FAMILIAR WITH THE CONTROLS.

⚠ WARNING

WARNING INDICATES A HAZARD WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY AND/OR PROPERTY DAMAGE.

⚠ CAUTION

CAUTION INDICATES YOU CAN BE HURT OR YOUR EQUIPMENT DAMAGED IF THE SAFETY INSTRUCTIONS THAT FOLLOW THIS SIGNAL WORD ARE NOT OBEYED.

⚠ IMPORTANT

INDICATES HELPFUL INFORMATION FOR PROPER ASSEMBLY, OPERATION, OR MAINTENANCE OF YOUR EQUIPMENT.

⚠ WARNING

CALIFORNIA PROPOSITION 65 WARNING

ENGINE EXHAUST FROM THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM.

⚠ WARNING

CERTAIN COMPONENTS IN THIS PRODUCT AND ITS RELATED ACCESSORIES CONTAIN CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS, OR OTHER REPRODUCTIVE HARM. WASH HANDS AFTER HANDLING.

⚠ WARNING

FAILURE TO COMPLY WITH ALL SAFETY AND OPERATING INSTRUCTIONS CAN RESULT IN LOSS OF ENGINE CONTROL, SERIOUS PERSONAL INJURY TO YOU AND/OR BYSTANDERS, AND RISK OF EQUIPMENT AND PROPERTY DAMAGE.

ENGINE SAFETY PRECAUTIONS

Preventing Carbon Monoxide Poisoning

- Never try to ventilate engine exhaust indoors. Carbon monoxide can reach dangerous levels very quickly.
- Never run engine outdoors where exhaust fumes may be pulled into a building.
- Never run engine outdoors in a poorly ventilated area where the exhaust fumes may be trapped and not easily taken away. (Examples include: in a large hole or areas where hills surround your working area.)
- Never run engine in an enclosed or partially enclosed area. (Examples include: buildings that are enclosed on one or more sides, under tents, car ports or basements.)
- Always run the engine with the exhaust and muffler pointed in the direction away from the operator.
- Never point the exhaust muffler towards anyone. People should always be many feet away from the operation of the engine and its attachments.
- Do not change the engine governor settings or over-speed the engine.
- Stay away from rotating parts. Place protective covers over rotating parts.
- Do not use engine around dry brush, cloth rags, or other flammable materials.
- Always keep materials and debris clear of muffler guard and other hot engine parts.
- Never operate the engine without the muffler guard in place.
- Always make sure exhaust pipe is free of foreign objects.
- The engine exhaust becomes very hot during operation. Keep engine at least three feet away from buildings and other equipment during operation.
- Wear appropriate clothing such as a long-sleeved shirt or jacket. Also wear long trousers or slacks. Do not wear shorts. Never wear sandals, sneakers, or open shoes, and never operate the machine with bare feet.
- Do not wear loose clothing or jewelry. They can get caught in moving parts. Always keep hands, feet, hair and loose clothing away from any moving parts on engine and machine.

Gasoline Fires and Handling Fuel Safely

Use extra care in handling gasoline and other fuels. They are flammable and vapors are explosive.

- When storing extra fuel be sure that it is in an appropriate container and away from any fire hazards.

⚠ WARNING

ENGINES GIVE OFF CARBON MONOXIDE, AN ODORLESS, COLORLESS, POISONOUS GAS. CARBON MONOXIDE MAY BE PRESENT EVEN IF YOU DO NOT SMELL OR SEE ANY ENGINE EXHAUST. BREATHING CARBON MONOXIDE CAN CAUSE NAUSEA, FAINTING OR DEATH, IN ADDITION TO DROWSINESS, DIZZINESS AND CONFUSION.

IF YOU EXPERIENCE ANY OF THESE SYMPTOMS, SEEK FRESH AIR AND MEDICAL ATTENTION IMMEDIATELY.

START AND RUN ENGINE OUTDOORS. DO NOT START OR RUN ENGINE IN ENCLOSED AREA, EVEN IF DOORS OR WINDOWS ARE OPEN.

⚠ CAUTION

HOT GASES ARE A NORMAL BY-PRODUCT OF A FUNCTIONING CATALYTIC CONVERTER. FOLLOW ALL SAFETY INSTRUCTIONS TO PREVENT BURNS AND FIRES.

DO NOT ALTER/MODIFY ENGINE:

NEVER ALTER OR MODIFY THE ENGINE FROM THE FACTORY. SERIOUS INJURY OR DEATH MAY OCCUR IF ENGINE IS MODIFIED OR ALTERED.

WHEN WORKING ON OR REPLACING PARTS FOR THE ENGINE OR PRODUCT, YOU MUST ALWAYS DISCONNECT SPARK PLUG WIRE FROM THE SPARK PLUG AND KEEP IT AWAY FROM THE SPARK PLUG.

- Prevent fire and explosion caused by static electric discharge. Use only nonmetal, portable fuel containers approved by the Underwriter's Laboratory (U.L.) or the American Society for Testing & Materials (ASTM).
- Always fill fuel tank outside in a well ventilated area. Never fill your fuel tank with fuel indoors. (Examples include: basement, garage, barn, shed, house, porch, etc.) Never fill tank near appliances with pilot lights, heaters, or other ignition sources. If the fuel has to be drained, this should be done outdoors. The drained fuel should be stored in a container specifically designed for fuel storage or it should be disposed of carefully.
- Never remove the fuel cap or add fuel with the engine running. Stop engine and allow to cool before removing the fuel cap/and or refilling the engine.
- Never drain fuel from engine in an enclosed area.

- Always wipe up excess (spilled) fuel from engine before starting. Clean up spilled fuel immediately. If fuel is spilled, do not start the engine but move product and fuel container from area. Clean up spilled fuel and allow to evaporate and dry after wiping and before starting.
- Allow fuel fumes/vapors to escape from the area before starting engine.
- Test the fuel cap for proper installation before starting and using engine.
- Always run the engine with fuel cap properly installed on the engine.
- Never smoke while refilling fuel tank or while operating the engine.
- Do not store engine with fuel in fuel tank indoors. Fuel and fuel vapors are highly explosive.
- Never pour fuel from engine fuel tank.
- Never siphon fuel by mouth to drain fuel tank.
- Always have an adult fill the fuel tank and never allow children to fill the engine.
- Never allow an adult or anyone under the influence of drugs or alcohol to fill engine.
- When storing gasoline or equipment with fuel in the tank, store away from furnaces, stoves, water heaters or other appliances that have a pilot light or other ignition source because they can ignite gasoline vapors.

BURNS AND FIRES

The muffler, muffler guard and other parts of the engine become extremely hot during the operation of the engine. These parts remain extremely hot after the engine has stopped.

Prevention of Burns and Fires

- Never remove the muffler guard from the engine.
- Never touch the muffler guard because it is extremely hot and will cause severe burns.
- Never touch parts of the engine that become hot after operation.
- Always keep materials and debris away from muffler guard and other hot parts of the engine to avoid fires.
- This engine is designed to operate using a catalytic converter which contributes to the engine's compliance with the EPA.

SERVICE

- Always stop the engine whenever you leave the equipment, before cleaning, repairing or inspecting the unit. Engine should be turned off and cool, spark plug wire must be removed from spark plug before any repairs or adjustments are attempted. Never make adjustments or repairs with the engine (motor) running. Disconnect the spark plug wire, and keep the wire away from the plug to prevent accidental starting. Remove the ignition key if equipped with an electric start.
- Always wear eye protection when you make adjustments or repairs.
- Keep all nuts and bolts tight and keep equipment in good condition.
- Never tamper with safety devices. Check their proper operation regularly.
- When servicing or repairing the engine, do not tip the engine over or up unless specifically instructed to do so in this manual. Service and repair procedures can be done with the engine in an upright position. Some procedures will be easier if the engine is lifted on a raised platform or working surface.
- To reduce fire hazard, keep engine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage. Allow engine to cool before storing.
- Stop and inspect the equipment if you strike an object. Repair, if necessary, before restarting.
- Clean and replace safety and instruction decals as necessary.
- To guard against engine over-heating, always keep recoil housing clean.
- Inspect engine before storage. When not in use, disconnect spark plug lead and store indoors in a dry place locked or otherwise inaccessible to children.
- Use only original equipment parts from Viper®, including all nuts and bolts.

SAFETY SYMBOLS

The following symbols may be used on your engine to alert you to potential hazards or to give you guidance in operating your engine. Look over them and understand their meanings before operating your engine.

Safety or Hazard Symbols

Fire hazards

Wear eye protection

Shock hazard

Hot surfaces

Toxic fumes

Moving parts

Read manual before operation

Hot! Do not touch!

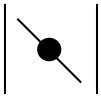
Operational Control Symbols

Slow

Fast

Fuel

Oil


Choke

On/Off

SPECIFICATIONS

Displacement/Cycle	99cc; 4-Cycle
Ignition Type	Electronic ignition
Cooling System	Forced air cooling
Idling Carburetor Adjust	2000 +/- 100 RPM
Valve Clearance	Cold engine-Intake: 0.10 - 0.15 mm; Exhaust: 0.15 - 0.20 mm
Maximum Torque	4.7-N.M./2500 RPM (3.32 ft-lb @ 2500 RPM)
Bore and Stroke	56 x 40 mm
Spark Plug Type	~.030" (0.7-0.8 mm gap) Torch/LG E5TC
Gasoline Type	Unleaded
Gasoline Tank Capacity	Approximately .53 gallons (2.0 L)
Drive Shaft Type	16mm, 60.1mm from end of shaft to mounting surface, 4.78 mm x 45 mm full key, drilled and tapped M6-6H, 25 mm min., full thread
Start Type	Recoil
Speed	3800 RPM
Oil Capacity and Type	0.37 quart (0.35 liters); SAE 30 (in freezing weather use 5W30)
Weight	23.2 lb, dry (10.5 kg, dry)
Overall Dimensions	310 mm x 290 mm x 310 mm

FEATURES

ENGINE COMPONENTS

MODEL 13276 99CC HORIZONTAL SHAFT

This is a 4-cycle air cooled engine. The 99cc engine utilizes a horizontal shaft and an oil slinger lubricated system.

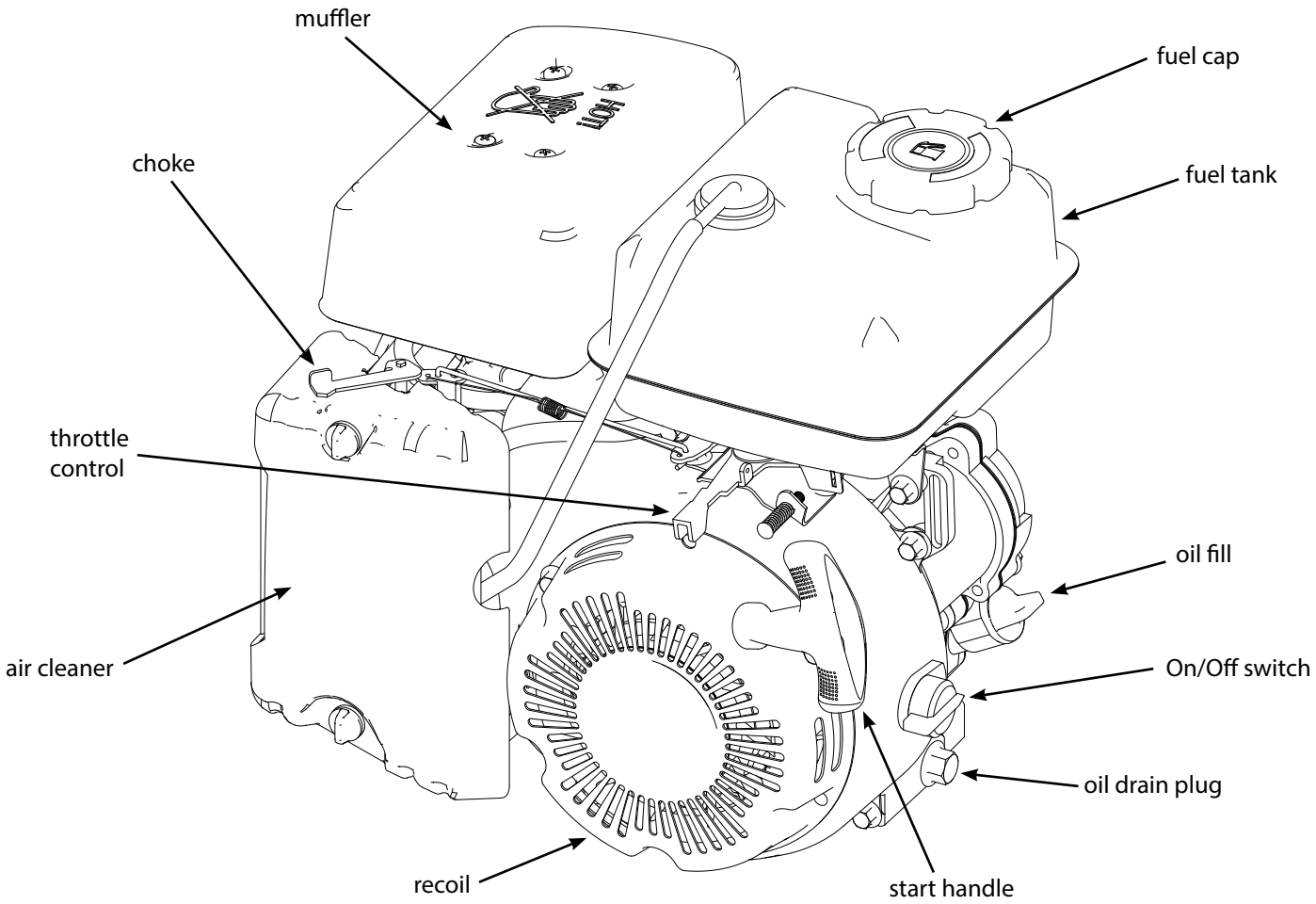
⚠ WARNING

DO NOT REFUEL WHILE SMOKING, NEAR OPEN FLAME, OR OTHER POTENTIAL HAZARDS.

FUEL IS HIGHLY FLAMMABLE AND MUST BE HANDLED WITH CARE. NEVER FILL THE TANK WHEN THE ENGINE IS HOT OR RUNNING. ALWAYS MOVE OUTDOORS TO FILL THE TANK.

⚠ IMPORTANT

ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE. IF ENGINE IS STARTED WITHOUT OIL, ENGINE MAY BE DAMAGED BEYOND REPAIR AND WILL NOT BE COVERED BY WARRANTY.

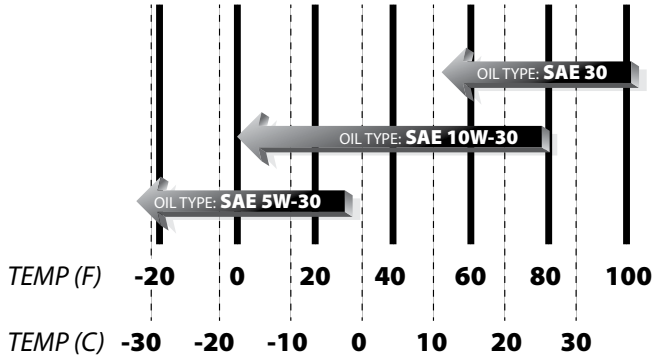


OPERATION

PRE-OPERATION INSPECTION

1. Check that the engine is equipped with the proper amount and type of oil. To determine the most appropriate type of oil to use, see the chart below.
2. Check that the engine has appropriate amount of fuel.
3. Examine underneath and around engine for signs of oil or fuel leaks.
4. Inspect fuel hoses and connections for tightness and fuel seepage.
5. Look for signs of engine damage.
6. Check that all guards and shields are in place, and all screws, nuts and bolts are tightened.
7. Eliminate excessive debris around muffler and recoil starter.
8. Be sure air filter and cylinder fins are clean and free of debris.
9. Check the equipment powered by this engine. Review the operator's manual provided with the equipment powered by this engine for any safety and warning precautions and/or procedures that should be followed before starting this engine.

Choosing Oil Type



⚠ WARNING

IMPROPERLY MAINTAINING THIS ENGINE, OR FAILURE TO CORRECT A PROBLEM BEFORE OPERATION, CAN CAUSE A MALFUNCTION WHICH MAY RESULT IN SERIOUS INJURY OR DEATH. ALWAYS PERFORM A PRE-OPERATION INSPECTION BEFORE EACH OPERATION AND CORRECT ANY PROBLEM.

⚠ WARNING

DO NOT ATTEMPT TO START ENGINE IN THE FOLLOWING WAYS:

- **DO NOT USE STARTING FLUID.**
- **DO NOT SPRAY FLAMMABLE LIQUIDS OR VAPORS INTO AIR CLEANER, CARBURETOR OR SPARK PLUG CHAMBER.**
- **DO NOT REMOVE SPARK PLUG AND PULL ON STARTER ROPE. FLAMMABLE FUEL CAN SPRAY OUT AND IGNITE FROM A SPARK FROM SPARK PLUG.**

DO NOT REFUEL WHILE SMOKING, NEAR OPEN FLAME, OR OTHER POTENTIAL HAZARDS.

FUEL IS HIGHLY FLAMMABLE AND MUST BE HANDLED WITH CARE. NEVER FILL THE TANK WHEN THE ENGINE IS HOT OR RUNNING. ALWAYS MOVE OUTDOORS TO FILL TANK.

⚠ CAUTION

FOR THE SAFETY OF THE USER, AND TO MAXIMIZE THE LIFE OF THE ENGINE, IT IS CRUCIAL TO TAKE TIME TO CHECK THE CONDITION OF THE ENGINE. PROBLEMS MUST BE CORRECTED BEFORE OPERATING.

AVOID INJURY! ENGINE OIL IS HAZARDOUS TO YOUR HEALTH. DISPOSE OF OIL APPROPRIATELY. USE A SAFE DISPOSAL/RECYCLING CENTER.

⚠ CAUTION

ENGINE IS SHIPPED FROM FACTORY WITHOUT OIL. YOU MUST ADD ENGINE OIL BEFORE STARTING ENGINE.

CHECKING AND ADDING OIL

Be sure the engine is located on a level surface before checking or refilling oil.

1. Clean around oil fill area and drain plug. **SEE FIGURE 1**
2. Slide out dipstick and wipe clean with cloth. **SEE FIGURE 1**
3. Reinsert and tighten dipstick.
4. Slide out dipstick and check oil.
5. If oil level is below the top thread of the oil fill hole, refill to upper level. **SEE FIGURE 1**
6. Change oil if contaminated.

Engine oil may be put in through the oil dipstick hole or through the oil fill plug opening. If an oil plug is present, loosen screw and fill oil until oil level is even with top thread in plug hole.

CHECKING AND FILLING FUEL TANK

Be sure the engine is located on a level surface before checking or refilling fuel. Use unleaded regular, unleaded premium automotive fuels only. Commercial fuel may contain up to 10% ethanol. Ethanol additives to fuel are known to cause deterioration of fuel lines and other fuel components. Viper® recommends the addition of fuel stabilizer to protect your engine's fuel system and prolong the life of your engine. **DO NOT mix oil with fuel.**

1. Make sure engine is cool and not running while filling.
2. Remove fuel cap.
3. Fill tank to fuel level limit. **SEE FIGURE 2**
   Note: Do not overfill.
3. Replace cap and remove any spilled fuel before operating.

⚠ WARNING

FUEL IS HIGHLY FLAMMABLE AND MUST BE HANDLED WITH CARE. NEVER FILL THE TANK WHEN THE ENGINE IS HOT OR RUNNING. ALWAYS MOVE OUTDOORS TO FILL THE TANK.

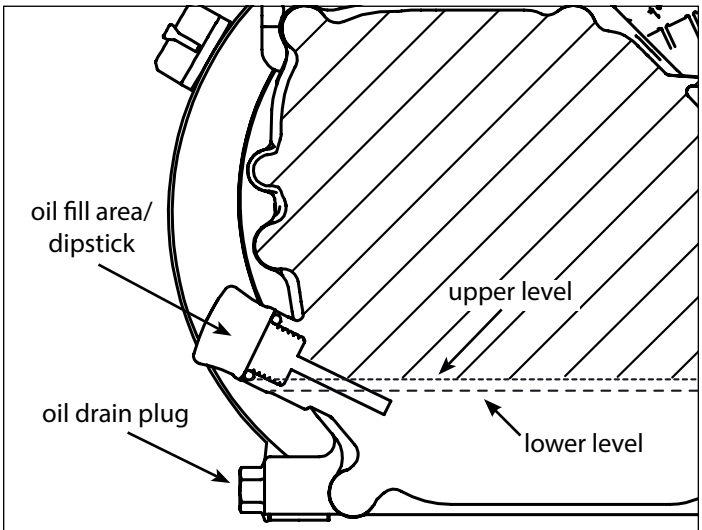


FIGURE 1

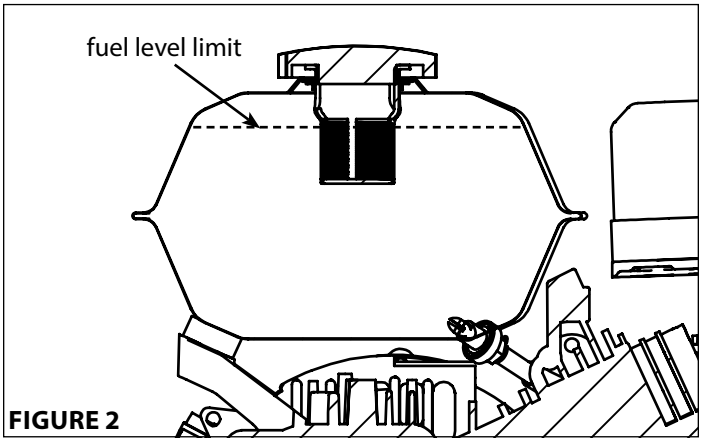


FIGURE 2

STARTING AND STOPPING ENGINE

NOTE: Operating engine on a steep angle will cause the engine to lose lubrication and seize.

Review "Warnings and Safety Precautions" and "Pre-Operation Inspection" sections before starting engine.

Manual-Start Engine

1. Move engine to a well-ventilated area, always outdoors, to prevent carbon monoxide poisoning.
2. Move to an area away from flames or sparks, to avoid ignition of vapors if present.
3. Remove all debris from air cleaner holes and fuel cap to ensure proper air flow.
4. Move throttle 1/2 of the way toward the highest speed position.
5. Close the choke lever:
   - If the engine is cold or the ambient temperature is low, close the choke lever fully. **SEE FIGURE 5**
   - If the engine is warm or the ambient temperature is high, open the choke lever half-way or keep it fully open. **SEE FIGURE 3 AND 4**

⚠ WARNING

CARBON MONOXIDE GAS IS TOXIC. INHALATION CAN CAUSE UNCONSCIOUSNESS AND DEATH.

NEVER LEAVE ENGINE RUNNING WHILE UNATTENDED.

⚠ CAUTION

DO NOT STOP ENGINE BY MOVING CHOKE CONTROL TO CHOKE. BACKFIRE, ENGINE DAMAGE, OR FIRE MAY OCCUR.

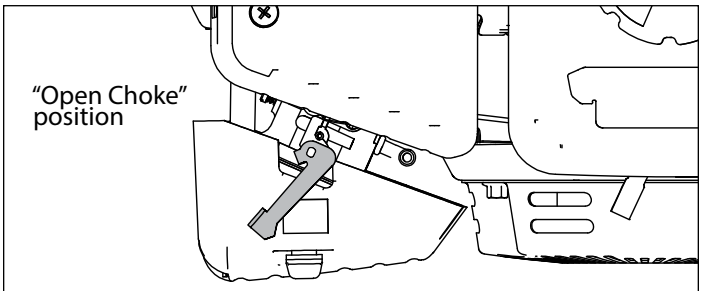


FIGURE 3

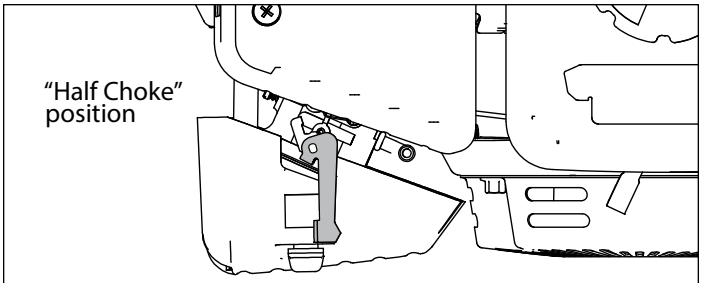


FIGURE 4

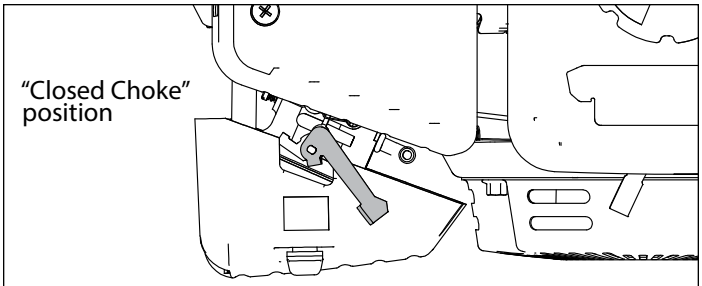


FIGURE 5

7. Turn the On/Off switch to the ON position. **SEE FIGURE 6**
8 Grasp starter handle and pull out slowly, until resistance is felt. Without letting it retract, pull rope with a rapid stroke. **DO NOT** pull out the rope all of the way. Let it return to its original position very slowly. Repeat this step until engine starts.
9. After engine begins operating, move choke lever to "Half Choke." **SEE FIGURE 4.**
10. Run engine for 30 to 45 seconds at "Half Choke" position until engine warms up.
11. After starting the engine, slowly move the choke lever to the "Open Choke" position as the engine warms up. Move throttle to desired speed. **SEE FIGURE 3**

To Stop the Engine:

1. Set the throttle lever to the low speed position and allow the engine to run at low speeds for 1-2 minutes before stopping.
2. On manual-start models, turn the On/Off switch to the OFF position. **SEE FIGURE 7**
3. Pull the starter handle slowly and return the handle to its original position when resistance is felt. This operation will prevent outside moisture from entering the combustion chamber.

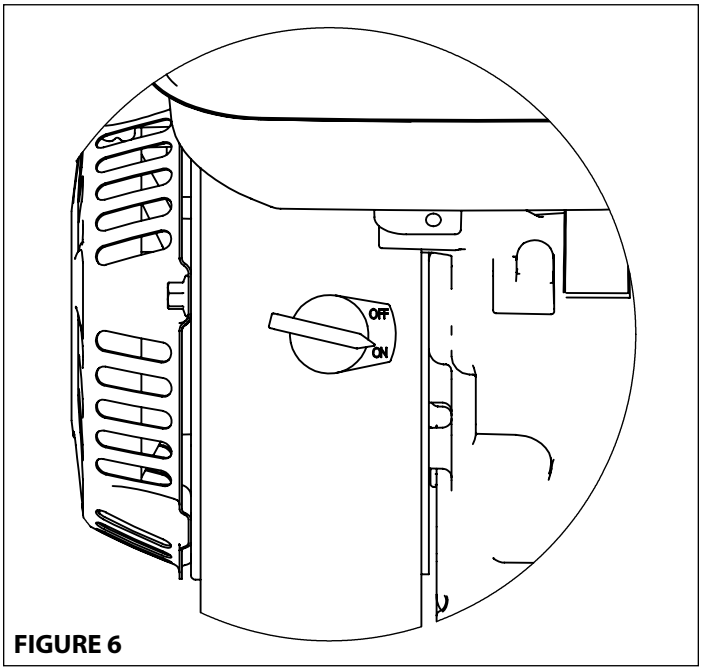


FIGURE 6

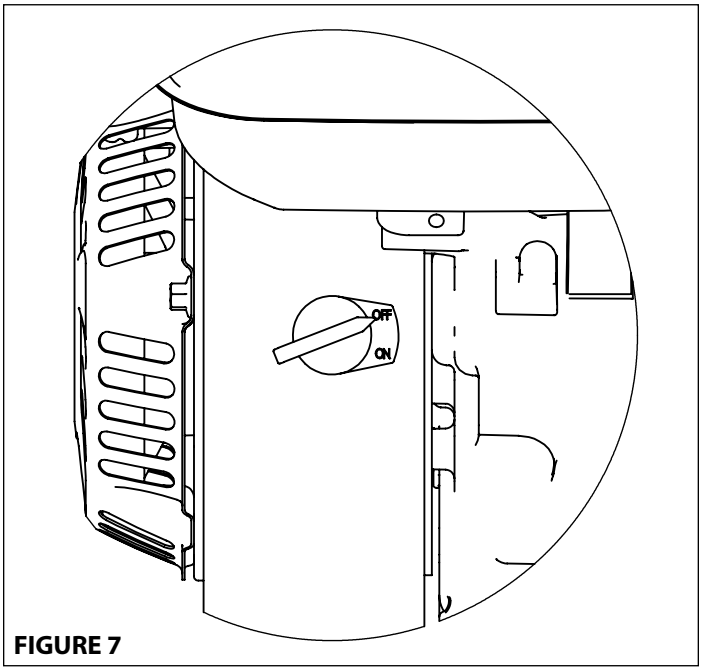


FIGURE 7

MAINTENANCE AND STORAGE

Please read the maintenance schedule, and observe these recommended care operating intervals to extend the life of your engine.

Good maintenance is essential for safe, economical, and trouble-free operation. It will also help reduce air pollution. To help you properly care for your engine, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a technician or other qualified mechanic.

Maintenance, replacement or repair of the emissions control devices and systems may be performed by any non-road engine repair establishment or individuals. However, items must be serviced by an authorized dealer to obtain "no charge" emissions control warranty service.

The maintenance schedule applies to normal operating conditions. If you operate your engine under unusual conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

⚠ WARNING

IMPROPER MAINTENANCE, OR FAILURE TO CORRECT A PROBLEM BEFORE OPERATION CAN CAUSE A MALFUNCTION WHICH MAY RESULT IN SERIOUS INJURY OR DEATH. ALWAYS FOLLOW THE INSPECTION AND MAINTENANCE RECOMMENDATIONS AND SCHEDULES IN THIS OPERATOR'S MANUAL.

⚠ CAUTION

TO PREVENT ACCIDENTAL STARTING:

AVOID INJURY! ENGINE MUST BE TURNED OFF AND COOL AND SPARK PLUG WIRE MUST BE REMOVED FROM SPARK PLUG BEFORE CHECKING AND ADJUSTING ENGINE OR EQUIPMENT.

AVOID INJURY! TEMPERATURE OF MUFFLER AND NEARBY AREAS MAY EXCEED 150 °F (65 °C). AVOID THESE AREAS.

AVOID INJURY! CHECK ENGINE OFTEN FOR LOOSE NUTS AND BOLTS. KEEP THESE ITEMS TIGHTENED.

MAINTENANCE SCHEDULE

MAINTENANCE ITEM		Every time of use	First month or 20 hours	Each season or 50 hours	Every 6 months or 100 hours	Each year or 300 hours
Clean Engine and Check Bolts and Nuts		X				
Engine Oil	Check	X				
(See Lubrication section)	Change *		X	X		
Air Filter	Check	X				
(See Air Filter section)	Clean **			X		
	Replace				X	
Spark Plug (Gap .030")	Check-Adjust			X		
(See Spark Plug section)	Replace				X	
Fuel Filter	Clean ***				X	
(See Fuel Filter section)	Replace					
Valve Clearance	Check-Adjust ***					X
Cylinder Head	Clean ***					X
Fuel Tank	Replace ***					(Every 3 years)

* Perform initial oil change after first 20 hours of operation, then every 50 hours or each season. Oil must be disposed of safely and responsibly. Do not pour into sewage drains, onto a garden/yard or into a water source. Your local zoning or environmental regulations will give you more detailed instructions on proper disposal techniques.

** Service more frequently under dusty conditions

*** These items should only be performed by a mechanically proficient person or by the servicing dealer

ENGINE MAINTENANCE

For daily maintenance checks, review "pre-operation inspection" section.

Lubrication

Choose engine oil that meets or surpasses the latest API service classification. Synthetic oils may be substituted for petroleum-based oils in extreme temperatures. For temperatures higher than 32 ºF, use SAE 30 or SAE 10W-30 motor oil. Use SAE 5W-30 or SAE 10W if temperatures are below 32 ºF. **DO NOT USE SAE 10W-40 MOTOR OIL.**

Oil Maintenance

After the first 20 hours, or after the first month of operating a new Viper® Engine the oil should be replaced, and every 50 hours of operating time thereafter. The oil should be changed every 25 hours if used under severe conditions, such as in high temperatures or under heavy loads, otherwise changed weekly. Check oil periodically; do not overfill.

Changing Oil

Be sure the engine is not operating and is located on a level surface before checking or refilling oil. Engine should be warm for easy removal of oil.

1. Detach spark plug wire and move away from spark plug. If the engine uses a battery, disconnect at negative terminal. **SEE FIGURE 8**
2. Remove oil drain plug and empty oil into suitable oil container. Dispose of oil properly. **SEE FIGURE 9**
3. Reinstall drain plug. Remove dipstick (if applicable) or oil fill cap. **SEE FIGURE 9**
4. Fill with appropriate oil to "FULL" or top line of dipstick; otherwise to top thread of oil fill hole. **SEE FIGURE 9**
5. Reinsert dipstick or oil fill cap and tighten.

⚠ CAUTION

OIL IS HAZARDOUS WASTE

AVOID INJURY! ENGINE OIL IS HAZARDOUS TO YOUR HEALTH. DISPOSE OF OIL APPROPRIATELY. USE A SAFE DISPOSAL/RECYCLING CENTER.

⚠ CAUTION

RUNNING ENGINE WITH AN LOW OIL LEVEL WILL CAUSE DAMAGE TO YOUR ENGINE. THIS TYPE OF DAMAGE IS NOT COVERED UNDER WARRANTY.

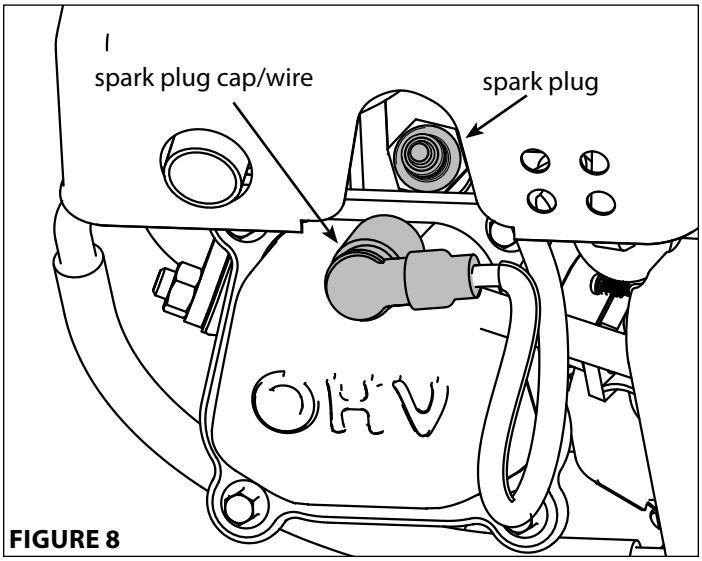


FIGURE 8

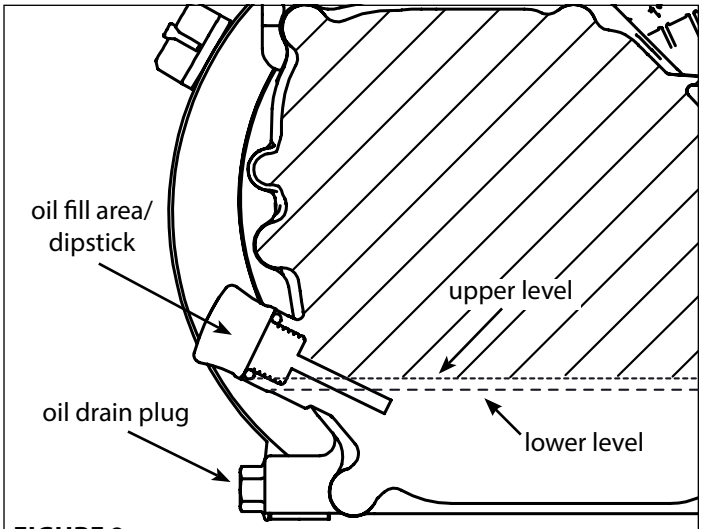


FIGURE 9

AIR FILTER

Refer to maintenance schedule for suggestions on when to service your air filter. **Clean filter daily in extremely dusty conditions.**

Removing/Installing Air Filter (SEE FIGURE 10)

1. Remove air cleaner cover.
2. Remove the air filter.
3. Replace with clean or new air filter.
4. Replace air filter cover.

Washing Air Filter

1. Wash in warm water with mild soap until dirt and debris are removed. Press filter when washing, do not twist.
2. Rinse in warm water until soap and dirt are removed.
3. Dry filter by wrapping in a clean cloth and pressing filter until it is dry.
4. Oil filter thoroughly with any common household lubricating oil.
5. Attach the filter and air cleaner cover to the engine.

SPARK PLUG

The recommended spark plug is a LG E5TC. The spark plug is located directly under the muffler. **SEE FIGURE 11**

Checking And Changing Spark Plug

1. Check spark plug every 50 operating hours.
   NOTE: To make the spark plug more accessible, the muffler may be removed.
2. Disconnect the spark plug cap, and clean any debris from around the spark plug area.
3. Remove spark plug and replace if any of the following occur; pitted electrodes, burned electrodes, cracked porcelain, or deposits around electrodes.
4. After analysis, seat spark plug and tighten with spark plug wrench to compress the sealing washer. **SEE FIGURE 11**
   - Reinstall original spark plug, tighten additional 1/2 turn.
   - Installing new spark plug, adjust spark plug gap to .030" (0.7-0.8 mm) and tighten additional 1/8 – 1/4 turn.

   NOTE: Loose spark plug may overheat and damage engine. Over tightened spark plug may damage threads in the cylinder head.

Spark Plug Maintenance

Spark plug should be removed, cleaned and gap adjusted after approximately fifty hours of operating time.

NOTE: A sand blaster should not be used to clean spark plugs. Microscopic particles remaining in the plug may score the engine cylinder during operation. Use solvent and a wire brush to clean the plug and compressed air to blow it out thoroughly.

⚠ WARNING

FUEL IS HIGHLY FLAMMABLE AND MUST BE HANDLED WITH CARE. NEVER FILL THE TANK WHEN THE ENGINE IS HOT OR RUNNING. ALWAYS MOVE OUTDOORS TO FILL FUEL TANK.

⚠ CAUTION

NEVER RUN ENGINE WITHOUT AIR FILTER PROPERLY INSTALLED. ADDED WEAR AND ENGINE FAILURE MAY OCCUR IF AIR FILTER IS NOT INSTALLED ON ENGINE.

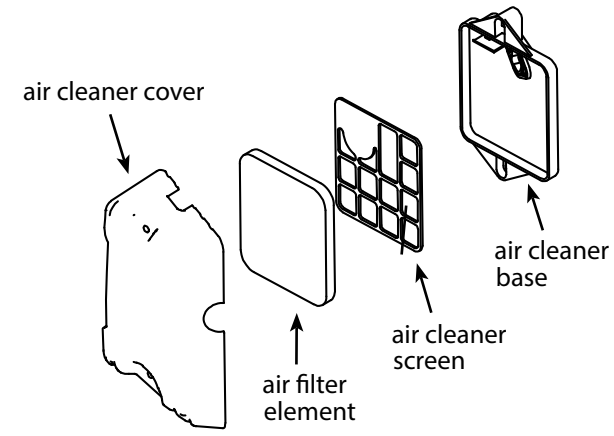


FIGURE 10

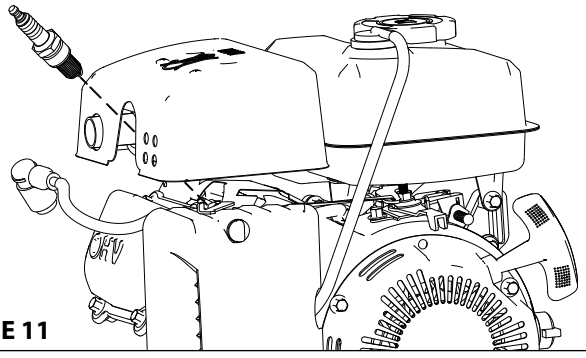


FIGURE 11

CARBURETOR

- Never tamper with factory setting of the carburetor.
- Contact your service provider or Viper® if adjustment is needed.

FUEL FILTER

Cleaning Or Replacing Fuel Filter

1. Disconnect spark plug wire from spark plug. Remove spark plug and protect spark plug hole from debris.
2. Drain fuel from tank before attempting to clean/replace filter.
3. Remove two nuts holding muffler to the engine and remove muffler.
4. Remove single tank bolt from fuel tank assembly.
5. Remove two nuts from underside of tank.
6. Gently lift tank off of the engine and disconnect the hose clamp. **SEE FIGURES 12 and 13**
7. Remove fuel tank filter by using proper size socket to turn filter counter clockwise. **SEE FIGURE 14**
8. Filter may be washed with kerosene or similar solvent.
9. If filter is extremely dirty or torn replace with new filter.
8. Reassemble and fill with clean fresh gasoline. Check for leaks prior to starting engine.

FIGURE 12

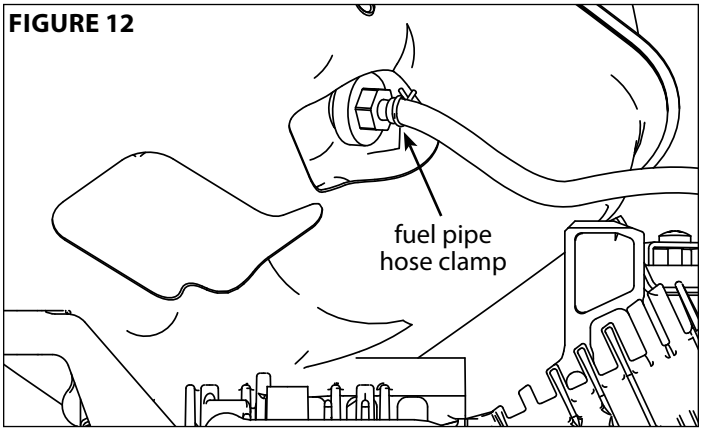


FIGURE 13

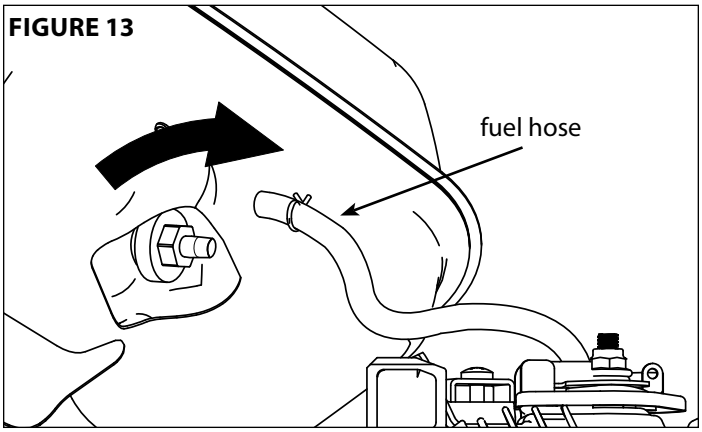
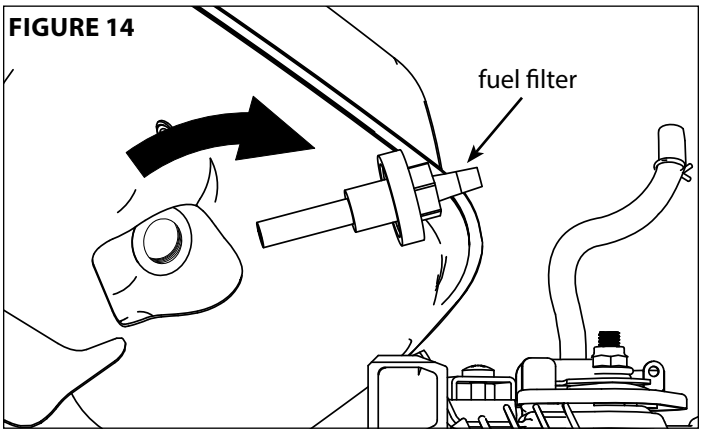


FIGURE 14



TRANSPORTING ENGINE

1. Never transport engine inside an enclosed space or vehicle. Fuel or fuel vapors may ignite causing serious injury or death.
2. If fuel is present in the fuel tank remove fuel or transport with an open vehicle in an upright position.
3. If an enclosed vehicle must be used, remove fuel into an approved red fuel container. DO NOT siphon by mouth.
4. Run engine or drain to use up the fuel in the carburetor and fuel tank. Always run engine in a well ventilated area.
5. Wipe away any spilled fuel from engine. Allow to dry.

STEPS FOR LONG-TERM STORAGE (30 DAYS OR MORE WITHOUT USE)

1. Add fuel stabilizer according to manufacturer's instructions.
2. Run engine for 10-15 minutes to ensure that the stabilizer reaches the carburetor.

   a) Start engine and run until engine runs itself out of any residual fuel left in carburetor bowl and fuel lines. (It is normal for the engine to run two to three minutes before the fuel is completely out of system.)
3. Remove the remainder of the fuel from the fuel tank into an approved fuel container.
4. Store engine in its upright position.
5. Remove all debris from engine.

⚠ WARNING

FAILURE TO FOLLOW MAINTENANCE INFORMATION CAN CAUSE DEATH OR SERIOUS INJURY.

DO NOT REMOVE FUEL WHILE SMOKING, NEAR OPEN FLAME, OR OTHER POTENTIAL HAZARDS.

AVOID INJURY! NEVER STORE ENGINE WITH FUEL IN THE TANK INSIDE A BUILDING. POTENTIAL SPARKS MAY BE PRESENT CAUSING IGNITION OF FUEL AND FUEL VAPORS.

⚠ WARNING

AVOID INJURY! TO AVOID INJURY OR DEATH, NEVER SIPHON FUEL BY MOUTH.

AVOID INJURY! CHECK ENGINE OFTEN FOR LOOSE NUTS AND BOLTS. KEEP THESE ITEMS TIGHTENED.

TROUBLESHOOTING AND REPAIR

At Ardisam we build quality and durability into the design of our products; but no amount of careful design by us, and careful maintenance by you, can guarantee a repair-free life for your Viper® Engine. Most repairs will be minor, and easily fixed by following the suggestions in the troubleshooting guide in this section.

This section will help you pinpoint the causes of common problems and identify remedies.

For more complicated repairs, you may want to rely on your retailer, an authorized service center, or contact Ardisam customer service. Ardisam will make the necessary repairs if a service center is not available. A parts breakdown is located toward the end of this manual.

We will always be glad to answer any questions you have, or help you find suitable assistance. To order parts or inquire about warranty, call or e-mail us using the contact information found in this section.

ORDERING REPLACEMENT PARTS

Parts can be obtained directly from the factory. To order parts visit www.ardisam.com or call 1-800-345-6007.

For other general questions, you can e-mail us at info@ardisam.com.

Please include the following information with your order:

1) Part numbers
2) Part description
3) Quantity
4) Model number and serial number

SPARE PARTS

Only use approved Viper® spares.

⚠ CAUTION

PRACTICE SAFETY AT ALL TIMES. ENGINE MUST BE TURNED OFF AND ALLOWED TO COOL AND SPARK PLUG WIRE MUST BE DISCONNECTED BEFORE ATTEMPTING ANY MAINTENANCE OR REPAIR.

TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	REMEDY/ACTION
Engine will not start	1. Power switch off	1. Flip switch to **ON** position
	2. Spark plug wire disconnected	2. Connect spark plug wire to spark plug
	3. Out of fuel	3. Refuel
	4. Spark plug wet, faulty or improperly gapped	4. Clean, replace or gap spark plug
	5. Stale fuel	5. Drain old fuel and replace with fresh. Use fuel stabilizer as a future preventative measure.
Engine runs rough, floods during operation	1. Dirty air filter	1. Clean or replace air filter
	2. Choke partially engaged	2. Turn off choke
	3. Carburetor out of adjustment	3. Call factory
Engine is hard to start	1. Stale fuel	1. Drain old fuel and replace with fresh. Use fuel stabilizer as a future preventative measure.
	2. Spark plug wire loose	2. Make sure spark wire is securely attached to spark plug
	3. Dirty carburetor	3. Clean carburetor, use fuel stabilizer, new fuel can
Engine misses or lacks power	1. Clogged fuel tank or fuel filter	1. Remove and clean
	2. Clogged air filter	2. Clean or replace
	3. Improper carburetor adjustment	3. Call factory
	4. Spark plug dirty, improper gap, or wrong type	4. Replace spark plug and adjust gap to .030"
Engine runs, then quits	1. Fuel cap not venting	1. Replace fuel cap

Contact a service provider if above remedies fail.

HIGH ALTITUDE OPERATION

Operating an engine with standard air-fuel mixture at altitudes greater than 3,000 feet will result in a fuel-rich operating condition. This can lead to increased fuel consumption, increased emissions, and the formation of carbon deposits on spark plugs that can result in difficulty starting engine. To ensure compliance with federal emission standards and avoid performance degradation, engines must be fitted with the appropriate altitude kit when operated at altitudes 3,000 feet or greater.

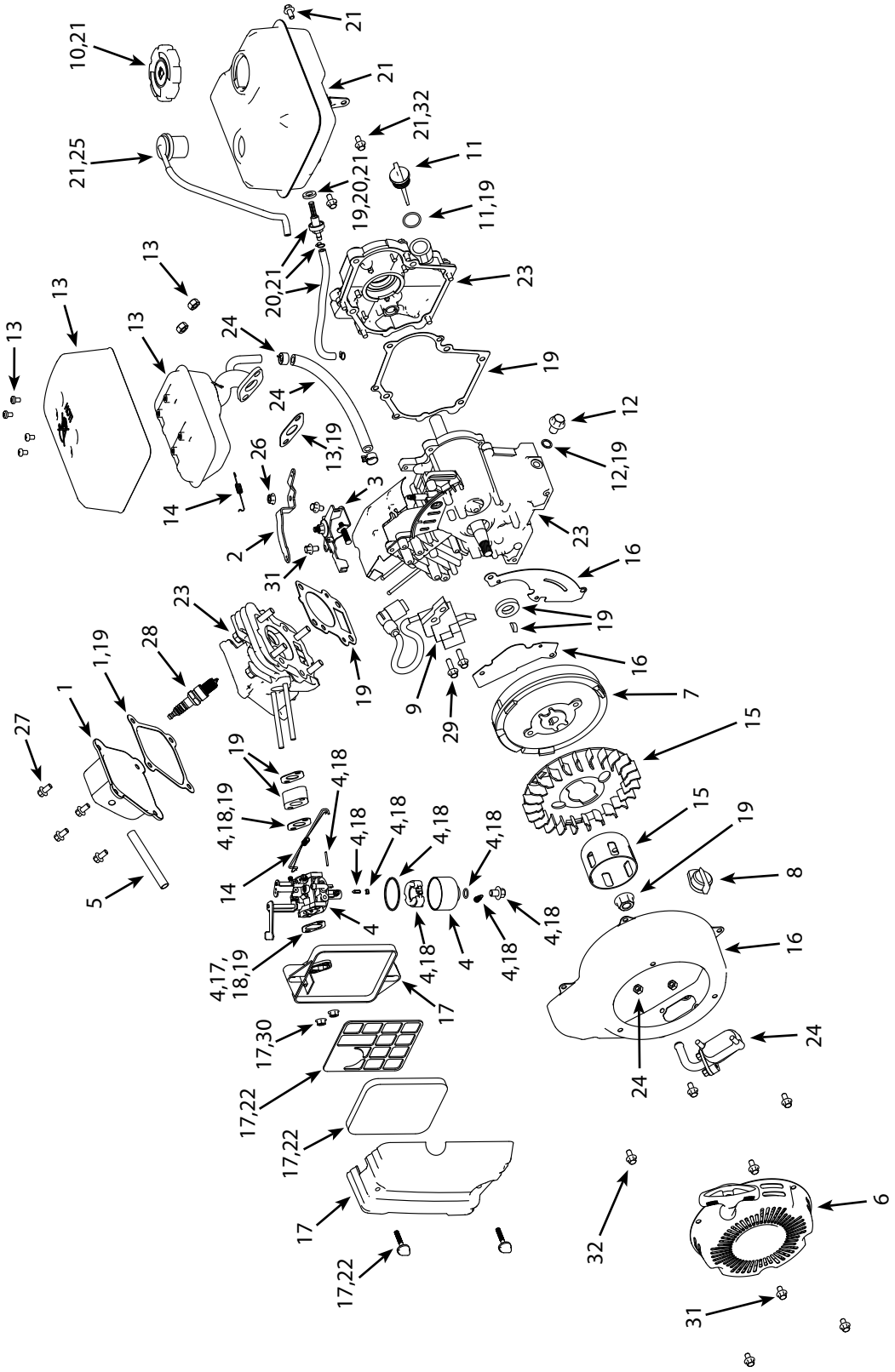
Altitude Kit Summary	
Altitude Kit Part Number	**Altitude Range (ft above sea level)**
13975	3000-6000 ft
13976	6000-8000 ft

NOTICE:

1. Engines should not be operated at less than 3,000 feet when fitted with an altitude kit. Doing so may result in serious damage to engine.
2. Engines that have been modified with an altitude kit should only be operated at altitudes for which the kit is designed. Failure to use the appropriate altitude kit at altitudes in excess of 3,000 feet may result in decreased engine performance, increased fuel consumption and increased engine emissions.
3. Engine operation is not recommended in altitudes greater than 8,000 feet. Doing so will negatively affect engine performance.
4. For more information on obtaining an altitude kit, see an authorized Viper dealer or contact customer service at 800-345-6007 Mondays through Fridays from 8 a.m. to 5 p.m. CST, or send an email to info@ardisam.com. Installation of altitude kits should be performed by an authorized Viper service center only.

PARTS BREAKDOWN

99cc ENGINE MAIN PARTS EXPLOSION



99CC ENGINE MAIN PARTS LIST

REF NO.	PART NO.	DESCRIPTION	QTY.
1	10060	KIT VALVE COVER	1
2	10066	GOVERNOR ARM	1
3	10067	THROTTLE CONTROL	1
4	10078	KIT CARBURETOR REPLACEMENT	1
5	10079	VACUUM BREATHER TUBE	1
6	10095	RECOIL ASSEMBLY	1
7	10099	FLYWHEEL	1
8	10101	ENGINE CUTOFF SWITCH	1
9	10102	IGNITION COIL	1
10	13780	CAP FUEL TANK SEALED	1
11	10118	DIPSTICK WITH SEAL	1
12	10119	OIL PLUG WITH SEAL WASHER	1
13	13894	KIT MUFFLER	1
14	10146	KIT THROTTLE CONTROL SPRINGS	1
15	10147	KIT STARTER CUP AND BLOWER FAN	1
16	10148	KIT BLOWER HOUSING	1
17	13895	KIT AIR CLEANER	1
18	10150	KIT CARBURETOR TUNE UP	1
19	13925	KIT GASKETS	1
20	13896	KIT FUEL LINE	1
21	13897	KIT FUEL TANK	1
22	10236	KIT REPLACEMENT AIR FILTER ELEMENT	1
23	–	SHORT BLOCK (FOR REFERENCE ONLY)	1
24	13898	KIT AUXILIARY AIR INTAKE	1
25	13778	FUEL VAPOR HOSE ASSEMBLY	1
NON-SERVICED PARTS (For Reference Only)			
26	–	NUT M6 X 1.0 HHFNYLK	1
27	–	BOLT M6 X 1.0 X 12 (8 HD) HHFCS GR8.8 ZN	4
28	–	SPARK PLUG LG E5TC	1
29	–	BOLT M6 X 20 HHFCS (8 HD) GR8.8 ZN	2
30	–	NUT M6 X 1.0 HSF GR8.8 ZN	2
31	–	BOLT M6 X 1.0 X 8 HHFCS GR8.8 YL ZN	5
32	–	BOLT M6 X 1.0 X 12 HHFCS GR 8.8 ZN T/T	7
NOT SHOWN PARTS			
–	13975	KIT ALTITUDE 3000 TO 6000 FT	–
–	13976	KIT ALTITUDE 6000 TO 8000 FT	–

99CC 4-CYCLE ENGINE

WARRANTY TERMS AND CONDITIONS

ENGINE WARRANTY: 2-YEAR LIMITED EMISSIONS CONTROL WARRANTY
(SEE EXPLANATION OF EMISSIONS CONTROL WARRANTY PROVISIONS FOR DETAILS)

Ardisam, Inc., a manufacturing company warrants its Viper® Engines under a two-year limited emissions control warranty to be free from defects in materials and workmanship for the service life of the product not to exceed twenty-four consecutive months from the date of purchase for consumer applications.

*These warranties apply only to products which have not been subjected to negligent use, misuse, alteration, accident, unauthorized parts, failure to use proper fuel and oil, or if repairs have been performed at non-authorized service centers. These warranties supersede all other warranties either expressed or implied and all other obligations or liabilities on our part. Ardisam, does not assume, and does not authorize any other person to assume for us, any liability in connection with the sale of our products. **To be at "No Charge," warranty work must be sent directly to Ardisam, Inc. or one of our authorized service centers and performed by them**. To obtain warranty service and/or replacement instructions, contact our customer service department. If you choose to ship your product to Ardisam for warranty repair, you must first have prior approval from Ardisam by calling our customer service department for a return material authorization number (RMA#). Under these circumstances, all items must be shipped prepaid. Ardisam will at no charge, repair or replace, at their discretion, any defective part which falls under the conditions stated above. Ardisam retains the right to change models, specifications and price without notice.

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EXPLANATION OF EMISSIONS CONTROL WARRANTY PROVISIONS

Viper Engines are designed, built and equipped to meet all EPA requirements. It warrants that it is free from defects in material and workmanship that could cause failure to the warranted part; and that it is identical in all material respects to the engine described in the manufacturer's application for certification. When a warrantable condition exists, Ardisam will repair your engine at no cost to you, including parts and labor. The engine emissions label will indicate certification information. If the purchaser is in need of a warrantable repair and is not within 100 miles distance from an Viper authorized repair center, Ardisam will pay for shipping costs to and from an authorized Viper repair center.

Listed below are the parts covered by the emissions control systems warranty. Some parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part. Coverage under this warranty includes only the parts listed below (the emission and evaporation control systems) if so equipped:

- Air Filter Assembly (only to the first scheduled replacement point)
- Fuel Filter (only to the first scheduled replacement point)
- Carburetor
- Fuel Lines, Fuel Line Fittings and Clamps
- Fuel Metering Valve (if equipped)
- Evaporative System (if equipped)
  - Canister (if equipped)
  - Canister filter (if equipped)
  - Vapor hose (if equipped)
  - Orifice connector (if equipped)
  - Fuel tank
  - Fuel cap
  - Primer bulb canister (if equipped)
- Spark Plugs
- Magneto Ignition System
- Muffler Assembly

LIMITATIONS

The Emission Control Systems Warranty shall not cover any of the following:

a) Repair or replacement required because of misuse or neglect, improper maintenance, repairs improperly performed or replacements not conforming to Ardisam specifications that adversely affect performance and/or durability and alterations or modifications not recommended or approved in writing by Ardisam.

b) Replacement of parts and other services and adjustments necessary for required maintenance at or after the first scheduled replacement point;

c) Consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.

d) Diagnosis and inspection fees that do not result in eligible warranty service being performed; and

e) Any add-on or modified part, or malfunction of authorized parts due to the use of add-on or modified parts.

These items will be covered for a period of **two years** from the date of the original purchase. Ardisam warrants that: the components are designed, built and equipped so as to conform with all applicable regulations adopted by the EPA; that they are free from defects in material and workmanship that could cause failure to the engine or other; and that the components used are identical in all material respects to the engine described in the manufacturer's application for certification. The warranty period begins on the date the engine is originally purchased.

MAINTENANCE AND REPAIR REQUIREMENTS

The owner is responsible for the proper use and maintenance of the engine. Viper recommends that all receipts and records covering the performance of regular maintenance be retained in case questions arise. If the engine is resold during the warranty period, the maintenance records should be transferred to each subsequent owner. Ardisam reserves the right to deny warranty coverage if the engine has not been properly maintained; however, Ardisam may not deny warranty repairs solely because of the lack of repair maintenance or failure to keep maintenance records.

Normal maintenance replacement or repair of emission control devices and systems may be performed by any repair establishment or individuals; however, warranty repairs must be performed by an Viper authorized service center. Any replacement parts or service that is equivalent in performance and durability may be used in non-warranty maintenance or repairs, and shall not reduce the warranty obligations of the engine manufacturer.

The warranty on emissions-related parts is as follows:

- Any warranted part that is not scheduled for replacement as required maintenance in the owner's manual supplied, is warranted for the warranty period stated above. If any such part fails during the period of warranty coverage, that part will be repaired or replaced at no charge to the owner. Any such part repaired or replaced under the warranty will be warranted for the remaining warranty period.
- Any warranted part that is scheduled only for regular inspection in the owner's manual supplied, is warranted for the warranty period. Any such part repaired or replaced under warranty will be warranted for the remaining warranty period.
- Any warranted part that is scheduled for replacement as required maintenance in the owner's manual supplied, is warranted for the period of time prior to the first scheduled replacement point for that part. If the part fails prior to the first scheduled replacement, the part will be repaired or replaced at no charge to the owner. Any such part repaired or replaced under warranty will be warranted for the remainder of the period prior to the first scheduled replacement point for the part.
- Add on or modified parts that are not exempted by the Air Resources Board may not be used. The use of any non-exempted add on or modified parts by the owner will be grounds for disallowing a warranty claim. The manufacturer will not be liable to warrant failures of warranted parts caused by the use of a non-exempted add on or modified part.

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All weights, specifications and features are approximate and are subject to change without notice. Due to continuous product improvements, product images may not be exact. Items used for props not included. Some assembly may be required.